

UNCLASSIFIED

AD 407 993

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION, ALEXANDRIA, VIRGINIA



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

① \$9.10 661 851 (14-70)

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

① SOCIAL-ECONOMIC AND WAGE CHARACTERISTICS

OF CIVILIAN EMPLOYEES, ALTUS

AIR FORCE BASE, OKLAHOMA,

① A THESIS

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

① 1963, degree of

① MA, MASTER OF ARTS

① 94 P.

① MA

① 14-19 MA

① BY JAMES M. L. KARNS

① (201) Norman, Oklahoma

① Master's thesis 1963

SOCIAL-ECONOMIC AND WAGE CHARACTERISTICS

OF CIVILIAN EMPLOYEES, ALTUS

AIR FORCE BASE, OKLAHOMA

A THESIS

APPROVED FOR THE DEPARTMENT OF ECONOMICS

BY

James E. Hibdon

A. J. Kondorassie

W. Peacock

ACKNOWLEDGMENTS

I wish to express my sincere appreciation to the following persons for their guidance and assistance in this study: to Professor W. Nelson Peach who directed the study, and to Professor Alexander J. Kondanassis and Professor James E. Hibdon for reading the manuscript and for their counsel as members of the committee.

Appreciation is also extended to Brigadier General William B. Campbell, 816th Air Division Commander, his subordinate commanders and their staffs, Altus Air Force Base, Oklahoma. Without their assistance and cooperation this project would not have been possible.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENT	iii
LIST OF TABLES	v
 Chapter	
I. INTRODUCTION	1
II. BACKGROUND	9
III. SOCIAL-ECONOMIC CHARACTERISTICS	27
IV. WAGE DISTRIBUTION OF CIVILIAN EMPLOYEES ALTUS AIR FORCE BASE	57
V. SUMMARY	77
APPENDICES	82
BIBLIOGRAPHY	91

Table	Page
9. Distribution of Civilian Employees, by Years of School Completed, Altus Air Force Base, Oklahoma, August, 1962	36
10. Marital Status of Civilian Employees, Altus Air Force Base, Oklahoma, August, 1962	38
11. Distribution of Civilian Employees, by Years of Service and Budgetary Unit, Altus Air Force Base, Oklahoma, August, 1962	40
12. Distribution of Civilian Employees, by Home Occupancy Status and Budgetary Unit, Altus Air Force Base, Oklahoma, August, 1962	43
13. Distribution of Civilian Employees, by Home Occupancy Status When Initially Hired, Altus Air Force Base, Oklahoma, August, 1962	45
14. Distribution of Civilian Employees, by Geographic Source When Initially Hired, Altus Air Force Base, Oklahoma, August, 1962	47
15. Distribution of Civilian Employees by Commuting Methods, Altus Air Force Base, Oklahoma, August, 1962	50
16. Distribution of Civilian Employees, by Commuting Time, Altus Air Force Base, Oklahoma, August, 1962	51
17. Percentage Distribution of Civilian Employees, by Gross Annual Wages and Budgetary Unit, Altus Air Force Base, Oklahoma, August, 1962	59
18. Percentage Distribution of Gross Annual Wages, by Age Groups, Civilian Employees, Altus Air Force Base, Oklahoma, August, 1962	61

Table	Page
19. Percentage Distribution of Gross Annual Wages, by Years of School, Civilian Em- ployees, Altus Air Force Base, Oklahoma, August, 1962	66
20. Distribution of Civilian Employees and Their Gross Annual Wages, by Length of Service, Altus Air Force Base, Oklahoma	68
21. Distribution of Civilian Employees and Their Gross Annual Wages, by Commuting Time, Altus Air Force Base, Oklahoma, August, 1962	71
22. Percentage Distribution of Gross Annual Wages, by Geographic Source When Initially Hired, Civilian Employees, Altus Air Force Base, Oklahoma, August, 1962	73

SOCIAL-ECONOMIC AND WAGE CHARACTERISTICS
OF CIVILIAN EMPLOYEES, ALTUS
AIR FORCE BASE, OKLAHOMA

CHAPTER I

INTRODUCTION

The effects of technology have been studied by economists for centuries. Yet the failure of economists to comprehend the social-economic consequences of the growth potential of technology created the Malthusian principle of population at the beginning of the 19th century.¹ And over 130 years later the doctrine of secular stagnation (based partially upon a slackening in technological progress) became a popular topic.² These doctrines are examples of many

¹M. Blaug, Economic Theory in Retrospect (Homewood, Illinois: Richard D. Irwin, Inc., 1962), 65.

²Gerald M. Meier and Robert E. Baldwin, Economic Development: Theory, History, Policy (New York: John Wiley and Sons, Inc., 1961), 112.

theories that failed to recognize the social-economic effects of growing technology.

Throughout history, technology has effected changes in consumption, distribution, production, and allocation of resources. For example, consumption patterns in 1963 are quite different from those in 1900. Also, distribution of the national income in 1963 differs from that during the Laissez Faire period, 1850-1900. Technology has been instrumental in these changes. Likewise, technology has affected production and resource allocation.

The emergence by 1960 of the aerospace industry is an example of the continuing technological progress, with its peculiar effects upon contemporary society.

This study is an attempt to identify the effects of technological change upon a group of employees at one aerospace site, as measured in terms of social-economic and wage characteristics.

Purpose

The aerospace industry in southwestern Oklahoma is a result of technological advance. The military and civilian populations at Altus Air Force Base represent a specialized group brought together because of the technological advances

in aerospace.

The purpose of this thesis is to determine characteristics which provide broad measures of the levels of living and comparative well being of the civilian labor force at Altus Air Force Base, Oklahoma. These social-economic characteristics and the wage distribution of this labor force will provide quantitative relationships which may prove valuable in the inductive process. To help relate data, comparisons will be made of observed phenomena of the Altus civilian employees with other empirical studies and analytically testable hypotheses of certain social-economic characteristics, such as commuting, spatial orientation of the labor market area, and labor mobility.

Moreover, the direct influence of the Base upon the community will be measured in terms of: (1) wages received

→ 4 →

³Similar studies either have been completed or are in the process of completion. Each research project is of a major organization within a community. The studies are as follows:

- a) Characteristics and Commuting Patterns of OCAMA Employees, Dr. R. C. Poole.
- b) Vance Air Force Base, Walter A. Smith.
- c) Clinton-Sherman Air Force Base, Leonard Drinko.
- d) Fort Sill Army Post, Floyd Durham.
- e) Federal Aviation Agency, Oklahoma City, L. M. Abernathy.
- f) Naval Depot, Muskogee, Oklahoma, T. Morgan.

by both military and civilian personnel, (2) construction programs on the Base, and (3) Base purchases of other goods and services.

Scope

The essential task of this study is the determination of particular social-economic characteristics and wage distributions of the civilian employees at Altus Air Force Base, Oklahoma. Civilian employees included in this study are classified into two major categories, Civil Service and Non-Appropriated Fund workers. Within the Civil Service category are two budgetary units. The first unit is employed under the Federal Classification Act of 1949; this group, variously described as "graded," "salaried," and "class act" employees, will be referred to only as "salaried employees" throughout the remainder of this thesis. The second budgetary unit of Civil Service employees is hired by authority of the Army-Air Force Wage Board. These workers are referred to as "wage board employees," or, as in this study, "hourly employees." The second major category of the civilian labor force, Non-Appropriated Fund employees, includes all civilians employed by organizations at the Base that are authorized to hire employees but must pay wages from their own funds rather than

from Government appropriated funds. Civilian employees of the following organizations are included in the Non-Appropriated Fund category:⁴

1. Base Exchange
2. Officer's Club
3. Non-Commissioned Officer's Club
4. Base Nursery
5. Recreation Services
6. Visiting Officers' Quarters/Bachelor Officers' Quarters
7. Government Mess Halls
8. Central Accounting Office

The social-economic characteristics included in the study are:

1. Age
2. Sex
3. Education
4. Marital status
5. Length of service at Altus Air Force Base
6. Home occupancy status
7. Mobility of employees
8. Commuting patterns

Wage data are based solely upon income received from employment at Altus Air Force Base and do not include either overtime payments or other income of the employees. This wage distribution is examined as it either affects or is affected by social-economic characteristics.

⁴ Over seventy military personnel at Altus Air Force Base work on a part-time basis for these organizations. They were not included in this study so that the civilian characteristics and wage distributions could be isolated.

Method of Approach

In July, 1962, conditional approval was given by Brigadier General William B. Campbell, 816th Strategic Aerospace Division Commander, to undertake this project. Final Base approval was subsequently given in conferences with the Commander of the 11th Strategic Aerospace Wing and his Combat Support Group Commander.

Useful information was obtained from records at the Base. The Procurement Office provided data about the purchases of goods and services for fiscal year 1961; the Base Exchange Officer supplied data concerning the aggregate income of Base Concessions, and the Comptroller offered unclassified portions of the overall budget for Fiscal Year 1963.⁵ An historical outline and description of the Base were prepared by the Office of Information Services. This information is discussed in Chapter II.

Data concerning civilian employees were obtained through a questionnaire that sought the following information about the employee: (1) current address, (2) address when initially hired, (3) commuting informations, (4) employment,

⁵ Base Concessions are awarded on the basis of competitive bids to civilian firms in the community.

and (5) personal data.⁶ The questionnaires to Civil Service employees were distributed, controlled, and collected by the Civilian Personnel Officer at Altus. Questionnaires to Non-Appropriated Fund employees were similarly handled by the Base Personal Services Officer.⁷

All questionnaires were screened for omissions, and appropriate footnote notations were made in the tabulated data. A code was prepared for each response so that the information of each respondent could be entered on code sheets and subsequently transcribed to data processing cards by use of the key punch and verifier. The processing was completed by use of the card sorting machine and machine data process printer. Significant variables, such as gross annual wages, were utilized as a summation check for each group of characteristics. In this manner, control was established for each table. Tables were prepared by grouping the machine runs, calculating percentages, and determining appropriate measures of central tendency. To insure accuracy, each table was rechecked against previously established control factors.

⁶The questionnaire is included as Appendix A to this study.

⁷Wage information from Non-Appropriated Fund employees was provided by the Base Central Accounting Office.

Presentation of Research

Chapter II includes a discussion of the community surrounding Altus Air Force Base, a history of the Base, and a description of the Base today (1962). The chapter reveals the extent to which the continuing Air Base Expansion was affecting the aggregate economic activity of the community. In this manner, the chapter provides the environmental setting of the civilian labor force.

The results of the research concerning this force are presented in the tables and the accompanying narratives in Chapters III and IV. The tables of social-economic characteristics, excluding wage distribution, are grouped and summarized in Chapter III. Quantitative relationships involving wage distribution were developed separately in Chapter IV. Chapter V contains the summary of this study.

CHAPTER II

BACKGROUND

This chapter will provide the background for the study in its discussion of the Altus Air Force Base and environs, the military personnel, and the civilian employees.

Base and Environs

Location and Surroundings. Altus Air Force Base, located at $99^{\circ} 16'$ West Longitude, $34^{\circ} 38'$ North Latitude, is adjacent to Altus, the largest city in Jackson County, Oklahoma. Jackson and the adjoining Harmon, Greer, Kiowa, and Tillman Counties comprise the southwestern corner of Oklahoma. The counties are similar in many respects, including decennial population trends during the period after Oklahoma became a state in 1907 until the reactivation of Altus Air Force Base during the Korean War.

The accompanying table, based on the Census of Population for the census years since 1910, indicates the

TABLE 1

PERCENTAGE OF 1930 POPULATION IN FIVE COUNTIES, SOUTHWESTERN
 OKLAHOMA, BY CENSUS YEARS 1910-1960
 (1930 = 100)

County	Per Cent of Population by Census Year					
	1910	1920	1930	1940	1950	1960
Jackson	82.1	76.6	100.0	78.5	69.5	102.9
Greer ^a	81.1	78.1	100.0	71.7	57.9	43.8
Harmon	81.9	81.4	100.0	72.4	58.4	42.3
Kiowa	92.9	77.9	100.0	77.0	63.9	50.0
Tillman	76.5	92.0	100.0	85.1	72.2	60.1

^aParts taken to form Harmon County in 1909, and Jackson County and part of Beckham in 1907, part of Beckham County annexed in 1910.

Sources: Data for 1910; Thirteenth Census of the U. S., Population, 1910, Vol. III, Table 1--Population of Minor Civil Divisions: 1910, 1907, 1900, and 1890, pp. 445-454. Data for 1920; Fourteenth Census of the U. S., Population, 1920, Vol. III, Table 9--Composition and Characteristics of the Population for Counties; 1920, pp. 819-823. Data for 1930; Fifteenth Census of the U. S.: 1930 Population, Vol. III, Part 2, Table 11--Population by Age, Color, Nativity, and Sex, for Counties; 1930, pp. 552-556. Data for 1940; Sixteenth Census of the U. S.: 1940, Population, Characteristics of the Population, Vol. II, Part 5, Table 21--Composition of the Population by Counties; 1940, pp. 825-828. Data for 1950; Census of Population, Characteristics of the Population, Vol. II, Part 36, Oklahoma, Table 5--Area and Population of Counties, Urban and Rural: 1930 to 1950, pp. 36-39. Data for 1960; U. S. Bureau of the Census, U. S. Census of Population 1960, Final Report PC (1)-38A, Table 6--Area and Population of Counties, Urban and Rural: 1960 and 1950, pp. 11-12.

percentage of population change in these counties. The census year 1930 was selected as the base year because population in the area reached a maximum at that time. The populations in all counties declined in 1940 and 1950. With the exception of Jackson, this decline continued through 1960. These four counties surrounding Jackson were 50 per cent less populated in 1960 than in 1930. However, this continued decline is not true for Jackson County. Although Jackson County paralleled the decline of the other counties through 1950, its population climbed during the decade and in 1960 reached 29,736, an increase of almost 10,000 over 1950.

Table 2, which classifies employed persons in Jackson County by industrial group, was prepared to identify the causes of this population increase. The table excludes military personnel and civilian employees of the Department of Defense. Agriculture, mining, construction, manufacturing, and service industries are listed as major industry groups. Service industries are subclassified in order to examine in detail the large increases in employment.

The number of employed persons in agriculture had declined nearly one-half during the 10-year period. Mining remained minor in importance, while construction and manufacturing industries had an increase of only 203 employees.

TABLE 2

EMPLOYED PERSONS BY INDUSTRY GROUP, JACKSON COUNTY, OKLAHOMA
1950 AND 1960

Industry Group of Employed Persons	Employed Persons	
	1950	1960
Agriculture	2,247	1,312
Mining	60	43
Construction	395	547
Manufacturing	314	365
Service Industries	3,544	5,111
Eating and Drinking Places	256	346
Other Retail Trade	750	988
Private Households	176	358
Other Personal Services	263	356
Public Administration	246	605
All other Services	1,853	2,458
Total	6,560	7,378

Sources: Data for 1950; U. S. Bureau of the Census, U. S. Census of Population: 1950, Vol. II, Characteristics of the Population, Part 36, Oklahoma, Table 43--Economic Characteristics of the Population, by Sex, for Counties: 1950, pp. 36-95. Data for 1960; U. S. Bureau of the Census, U. S. Census of Population: 1960, General Social and Economic Characteristics, Oklahoma, Final Report PC(1)-38C, Table 85--Industry Group of Employed Persons and Major Occupation Group of Unemployed Persons, by Sex, for Counties: 1960, pp. 38-225.

The table shows that service industries in Jackson County have not only offset the decline in agricultural employees but also largely accounted for the overall increase of employed persons (excluding the Department of Defense employees). One plausible explanation of the rising employment in the service industries of the County is the aggregate direct and derived demand created by Altus Air Force Base and its complement of military and civilian personnel. A brief history of this defense installation follows.

History of Altus Air Force Base.¹ Altus Air Force Base, Oklahoma, was opened for military use in 1942 to train cadets in twin-engine aircraft. The Base was closed within a week after hostilities ceased in Europe. Until early January, 1953 the property and runway were used as the Altus Municipal Airport.

In early 1953 the Base was reactivated by the 63d Troop Carrier Wing of the U. S. Air Force. On October 15, 1953, the 63d was transferred to Greenville, South Carolina, and the 96th Bombardment Wing was activated at Altus by the

¹ Historical Summary, including current mission of units, was prepared for this study and documented by Staff Sergeant Josh L. Chapman, Base Historian, Altus Air Force Base, Oklahoma, December 18, 1962. Cited hereafter as Historical Summary. This information was approved for release by Major Louis A. Burdman, Director of Information at the Base.

Strategic Air Command. The newly activated units included three bombardment squadrons, an air refueling squadron, three maintenance squadrons, wing headquarters, hospital group, and an Air Base Group. The primary mission of the Wing was to organize and train a force capable of immediate and sustained long-range bombing and air-to-air aerial refueling operations in any part of the world.

In January, 1955, the large number of personnel necessary for the support of the B-47 bombardment squadrons began arriving at the Base. Meanwhile, a 16-million-dollar appropriation financed the expansion of the runway and the construction of an engine shop, a bulk supply warehouse, jet fuel storage facilities, a dormitory, and officers' quarters. In 1956 a hospital, hangar, chapel, wing headquarters, group headquarters, flight simulator building, and dental clinic were completed and a 350-unit housing project costing over five million dollars was under construction on the Base.

After the 96th Bomb Wing was transferred to Dyess Air Force Base, Texas, in September, 1957, the 11th Bombardment Wing was moved to Altus. The Wing began training in the B-52 "Stratofortress" and the KC-135 "Stratotanker." During 1961 the 11th Bomb Wing became operational with the Guided Aircraft Missile (GAM) 72 "Green Quail" and the (GAM)

77 "Hound Dog." Also during this period, the 11th Bombardment Wing commenced the build-up of the Atlas "F" Intercontinental Ballistic Missile weapon system at strategic points surrounding Altus Air Force Base. The 577th Strategic Missile Squadron, responsible for manning and operating the Atlas complexes, was activated at Altus Air Force Base on June 1, 1960, and was declared operational during October, 1962, as the last of the complexes were assigned to the Strategic Air Command.

The Base Today (1962). In accordance with the blended force concept of organization and with the assignment of manned bombers and tankers and the unmanned Atlas "F" missiles, the 11th Bomb Wing was redesignated as the 11th Strategic Aerospace Wing on April 1, 1962. The present mission of the Wing is to be capable of conducting strategic bombardment operations on a global scale, either independently or jointly with land and sea forces.

Although the costs of real assets at the Base have been large, equally important for this study are the current operating expenditures, because it is possible to trace some of the current effects of the Base upon the community. These expenditures are summarized in the unclassified portion of the Altus Air Force Base budget for Fiscal Year 1963 and are

included as Appendix B in this study.² The Government funds received for expenditure at Altus, excluding payroll disbursements, total 3.4 million dollars. Most of these expenditures are negotiated by the Procurement Officer at the Base. Furthermore, the Procurement Officer makes other large purchases, such as food supplies, which are not included in the budget mentioned above. Throughout Fiscal Year 1962, the Base Procurement Office spent 4 million dollars; one-fifth of these funds were spent in the city of Altus and the remainder of expenditures was divided equally among the rest of Oklahoma (excluding the city of Altus) and other states. Appendix C shows the individual expenditures made by the Base in the city of Altus during the Fiscal Year 1962. Base procurements, classified according to type of purchase and community where purchased during Fiscal Year 1961, is included as Appendix D. The aggregate result of the gross capital goods purchased by the Base could be illustrated by the multiplier effect. The stimulation of the multiplier effect upon a community like Altus varies with the extent to which the city is able to manufacture as well as distribute to the Base.

²The military and civilian payrolls have been excluded from this overall budget.

The Military Personnel

The Base military population totaled 4,198 officers, non-commissioned officers, and airmen in December, 1962. This figure does not include military wives and dependent children. The annual military payroll of over 9 million dollars generates the direct demand of the military for goods and services in the community surrounding the Base.³ These goods include food, clothing, housing, and many other consumer items such as automobiles, refrigerators, toys, and furniture. These individuals also demand services in a multiplicity of forms: medical, dental, police, utilities, schools, churches, insurance, as well as entertainment.

For the convenience of military personnel, some commercial outlets such as barber shops, cleaners, laundries, watch repair, and venders of many items are located on the Base. Because the outlets must report money flows to the Base Exchange, these data were made available. For the period from January 25, 1961, to January 25, 1962, net revenue of such outlets totaled \$174,430.⁴

³ Interview with Major R. N. Smith, Base Finance Officer, Altus Air Force Base, Oklahoma, July, 1962.

⁴ Interview with Secretary of Records, Base Exchange, Altus Air Force Base, Oklahoma, September, 1962.

The Civilian Employees

Control, Function, and Number. The 11th Combat Support Group is organized under the 11th Strategic Aerospace Wing and is assigned the mission of supporting the parent wing and other attached units. This organization controls the Civil Service employees included in this labor force study who, in conjunction with assigned military personnel, are responsible for the following:

1. Maintaining and developing the Base facilities.
2. Providing custodial services for permanent Base installation records.
3. Providing administrative and logistical support for assigned and attached units.⁵

In addition, the 11th Combat Support Group supervises the control of the Non-Appropriated Fund employees who perform various service functions for the organizations employing them.

This civilian labor force at Altus Air Force Base includes 415 employees and has an annual payroll of nearly 1.8 million dollars.⁶ These employees live entirely with

⁵ Chapman, December 20, 1962, Historial Summary.

⁶ Compiled from data in the questionnaire.

the civilian community and, therefore, produce an effect upon the local economy. Furthermore, the ready availability of relevant data made this group well suited for the purposes of this study.

County of Residence. The accompanying table was prepared to determine the impact of the labor force upon the surrounding counties. The preponderance of the labor force resides in Jackson County. The 376 civilian employees, along with their military counterparts, have been a factor in the growth of Jackson County. The remaining 39 employees reside in five counties in Oklahoma and one county in Texas.

City of Residence. Table 4, which classifies employees by either city of residence or nearest residence, was prepared as a further aid in studying the impact of the Altus Air Force Base civilian labor force upon communities. Three hundred and fourteen, or three-fourths, of the 415 civilian employees reported Altus as their city of residence; another 31 employees reported Altus as the city nearest their residence. The next most cited city was Blair, also in Jackson County, which was reported to be either the city of residence or nearest residence by 16 employees. The remaining 54 employees were distributed among 21 cities.

TABLE 3

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY COUNTY OF RESIDENCE,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

County	Number of Employees	Per Cent
Jackson	376	90.6
Kiowa	16	3.9
Greer	12	2.9
Tillman	5	1.2
Harmon	3	0.7
Wilbarger (Texas)	2	0.5
Comanche	1	0.2
 Total	415	100.0

Source: Compiled from data in questionnaire.

TABLE 4

DISTRIBUTION OF CIVILIAN EMPLOYEES INSIDE AND OUTSIDE
 LIMITS OF CITIES, ALTUS AIR FORCE BASE, OKLAHOMA,
 AUGUST, 1962

County and City	Total	City of Residence	City Nearest Residence
Jackson County			
Altus	345	314	31 ^a
Blair	16	11	5
Olustee	4	2	2
Eldorado	3	...	3
Headrick	3	1	2
Duke	2	...	2
Martha	2	1	1
Friendship	1	...	1
Warren	1	1	..
Kiowa County ^a			
Snyder	10	8	2
Hobart	2	2	..
Mountain Park	2	...	2
Lone Wolf	1	1	..
Greer County			
Mangum	8	8	..
Granite	4	3	1
Reed	1	...	1 ^b
Tillman County			
Monitou	3	...	3
Fredrick	1	1	..
Tipton	1	...	1
Harmon County ^b			
Gould	1	...	1
Hollis	1	1	..

TABLE 4--Continued

County and City	Total	City of Residence	City Nearest Residence
Wilbarger County (Texas)			
Vernon	2	2	..
Comanche County			
Lawton	1	1	..
	—	—	—
Total	415	357	58

Source: Compiled from data in questionnaire.

^aOne resident of Kiowa County reported Altus as city nearest residence.

^bOne resident of Harmon County reported Reed as city nearest residence.

Home Occupancy Status. In Table 5 home occupancy status is classified according to residence, either in or near cities. The purpose of the table was to determine residential status of four groups: (1) those living within the city limits of Altus, (2) those living in rural areas near Altus, (3) those living in 22 cities surrounding Altus, and (4) those living in rural areas near these 22 cities.

More than one-half of the residents of Altus own their homes. Twenty of the 43 employees living inside other cities are home owners, and 19 of the 27 rural employees living outside these cities are home owners. Only nine of the 31 employees residing outside the city limits of Altus, however, were home owners.

In Altus the number of employees who rented was double the number who lived with relatives. In the three other areas, the employees who rented outnumbered slightly those who lived with relatives.

Summary

The five counties of southwestern Oklahoma typify the effects of technological change. The population of the counties has in the past engaged mainly in agricultural pursuits and, as in other areas of the country, technology has

TABLE 5

HOME OCCUPANCY STATUS OF CIVILIAN EMPLOYEES, FOR THE CITY OF
 ALTUS AND ALL OTHER, ALTUS AIR FORCE BASE, OKLAHOMA,
 AUGUST, 1962

Home Occupancy Status	City of Altus		All Other	
	Inside City Limits	Outside City Limits ^a	Inside City Limits	Outside City Limits ^b
Rent	94	13	13	5
Own	182	9	20	19
Live with relatives	35	8	10	3
No answer	3	1	..	..
Total	314	31	43	27

Source: Compiled from data in questionnaire.

^aIncludes all rural employees who reported Altus as city nearest residence.

^bIncludes all rural employees except those reporting Altus as city nearest residence.

reduced the manpower requirements in this basic industry; the result is shown by the declining populations of the counties. This decline reversed itself in Jackson County because technology brought to the scene a new industry-- aerospace. The demands of the military and civilian employees, who receive a total annual payroll of over 10 million dollars, have accelerated the economy in Jackson County and Altus, as is demonstrated by the rising employment, especially in the service industries.

Since reactivation in 1953, the Base has continuously expended funds for construction of facilities and operational necessities. Of the total expenditure of 4 million dollars during Fiscal Year 1962, approximately one-fifth was spent in the city of Altus. In addition to these recurring expenditures, large outlays have been made from time to time by the Base for housing, missile sites, and permanent buildings.

The civilian employees at Altus Air Force Base represented a unique group for the purpose of this study because they (1) were hired as a result of changing technology in aerospace, (2) could be isolated as a relatively stable group in this industry, and (3) consented to participate in this study of their social-economic characteristics and wage distributions. These employees resided primarily in Jackson

County and within the city of Altus. Over one-half of the civilian labor force owned their homes.

CHAPTER III

SOCIAL-ECONOMIC CHARACTERISTICS

The purpose of this chapter is to present the social-economic characteristics of the civilian labor force at Altus Air Force Base and thus to establish a foundation for measuring their levels of living and comparative well being. Specific characteristics of this group will be compared and contrasted with those of other labor force studies.

The Budgetary Unit

The civilian labor force is comprised of employees in three budgetary units: Civil Service salaried employees, Civil Service hourly employees, and Non-Appropriated Fund employees. Table 6 shows the total number of employees in each classification. One Civil Service employee failed to complete a major portion of the questionnaire; therefore, he is not included in the compilation. Furthermore, only those Non-Appropriated Fund employees who worked and received wages

TABLE 6

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY BUDGETARY UNIT,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Budgetary Unit	Number of Employees	Per Cent
Civil Service Salaried ^a	162	39.0
Civil Service Hourly	117	28.2
Non-Appropriated Funds	136	32.8
Total	415	100.0

Source: Computed from data in questionnaire and official records, Altus Air Force Base.

^aOne Civil Service salaried employee did not answer a major portion of the questionnaire and is not included in this table.

during the survey period in August, 1962, were included.

Military personnel who were employed part time in a Non-Appropriated Fund activity were excluded.

The percentage of employees within each budgetary unit illustrates the type of civilian support required by the Strategic Air Command at this one-wing Base. Because the military personnel at such a base are responsible for the maintenance and operation of the aircraft and the missiles, the civilian labor force is limited to supporting roles behind the flight line. Salaried workers are employed largely in administrative capacities, such as clerks, secretaries, and machine data processors. However, salaried employees also include directors, deputy directors, professional engineers, and other managerial personnel. At Altus this salaried group comprises 60 per cent of all Civil Service employees, while the remainder includes hourly employees who are used primarily in maintenance and supply activities on the facilities and the property behind the flight line.

The OCAMA labor force study revealed that over 60 per cent of the Civil Service employees were hired on an hourly basis.¹ At OCAMA the hourly employee generally works

¹Richard W. Poole, Characteristics and Commuting Patterns of the Oklahoma City Air Materiel Areas Labor Force (Tinker Air Force Base, Oklahoma: U. S. Air Force, 1962), 2.

either on the production line or in other logistic support roles associated with aerospace weapons systems. Likewise the salaried employee at OCAMA may work directly with production and logistic problems rather than in the administration of the Base. The difference between the missions at Altus and OCAMA also explains the difference in the number of Civil Service employees at the two Bases. The 279 Civil Service employees at Altus are only a little more than one per cent of the size of the OCAMA force.

This quantitative ratio is not applicable to the Non-Appropriated Fund employees. At Altus these employees and over 70 part-time military employees who work after-duty hours furnish goods and services to a complement of 4,198 military personnel.²

The number of employees in each budgetary unit as shown in Table 6 has been used as a control figure throughout most of the study. Therefore, the population base of this investigation includes 415 civilian employees: 162 salaried, 117 hourly, and 136 Non-Appropriated Fund personnel.

General Characteristics

Table 7 was prepared to determine the central tenden-

² Chapman, December 20, 1962, Historical Summary.

TABLE 7

GENERAL CHARACTERISTICS OF CIVILIAN EMPLOYEES, ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Characteristic	Mean	Median
Education (years) ^a	11.4	12
Age (years) ^a	40.4	41
Length of service at Altus AF Base (years) ^b	4.3	3.5
Commuting distance (miles)	6.7	4
Commuting time (minutes)	16.5	15

Source: Computed from data in questionnaire.

^aTwo employees did not reply to question.

^bFive employees did not reply to question.

cies (mean and median) of general characteristics of the civilian employees. Education, age, length of service at Altus Air Force Base, commuting distance, and commuting time were selected for measurement. The table is presented, without interpretation at this point of the study, simply as a frame of reference. These central tendencies will be introduced in subsequent discussion in this chapter of the particular characteristics.

Age and Sex Characteristics. Table 8 examines both age and sex of the labor force. When the sexes are classified by age groups, the largest percentage of males is found in the 40-49 group, while the largest percentage of females is concentrated in the 30-39 group. One-tenth of the men are age 29 and under, whereas almost one-third of the women employed are less than 30 years of age. Among those who are 60 or over, 18 are male and 3 are female. The median age of men is 45, while the median of women is 35. At OCAMA the median age of men is 41, while the median of women is 43.³

The labor force at Altus includes more females than males. This female majority differs considerably from either the OCAMA labor force⁴ or the force at Vance Air Force

³Poole, 4.

⁴Poole, 5.

TABLE 8
DISTRIBUTION OF CIVILIAN EMPLOYEES, BY AGE AND SEX, ALTUS AIR FORCE BASE,
OKLAHOMA, AUGUST, 1962

Age Group	Number			Per Cent		
	Male	Female	Total	Male	Female	Total
19 and under	7	14	21	3.5	6.6	5.1
20 - 29	15	49	64	7.4	23.0	15.4
30 - 39	47	61	108	23.3	28.6	26.0
40 - 49	59	55	114	29.2	25.8	27.5
50 - 59	55	30	85	27.2	14.1	20.5
60 and over	18	3	21	8.9	1.4	5.1
No answer	1	1	2	0.5	0.5	0.5
Total	202	213	415	100.0	100.0	100.0

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

Base.⁵ At both OCAMA and Vance, men outnumber women four to one. The type of work at Altus and OCAMA has been contrasted in previous discussion. At Vance the majority of employees work on the flight line in the maintenance of aircraft. All three studies show that the sex characteristics of the labor force are determined by the type of employment.

The median age of men at Altus is 45, which exceeds that at OCAMA by four years. This difference may be accounted for, in part, by the differing types of employment. Aircraft and missile maintenance, which is a major mission of the OCAMA employees, is performed by younger men. The Altus males are more likely to be employed in administrative capacities and those who are employed in repair and maintenance jobs are behind the flight line in more conventional functions such as road, building, or facility repair.

The youthful average age of women at Altus also differs from that of the nation's female labor force as described by Gertrude Bancroft.⁶ The Civil Service women at Altus are

⁵Walter Smith, "Income Distribution Among the Civilian Employees, Vance Air Force Base, Enid, Oklahoma" (unpublished Master's thesis, being prepared at the University of Oklahoma, 1963). Cited hereafter as the Vance Study.

⁶Gertrude Bancroft, The American Labor Force, Its Growth and Changing Composition (New York: John Wiley and Sons, Inc., 1958), 16.

either professional, or clerical and kindred workers; within the Non-Appropriated Fund group, they are generally either sales clerks, waitresses, or maids. These classifications are similar to those in Bancroft's study. Therefore, the type of employment does not explain the difference in average ages. The explanation may be that the demand for these various services at Altus is relatively greater than that throughout the nation.

Education Characteristics. Table 9 presents the distribution of the labor force by the years of school completed.

The education of the civilian laborer at Altus ranks above the national and state averages. As shown in Table 7 the median year of education among Altus employees is 12, while that for the state of Oklahoma is 10.4 and for the nation is 11.⁷ The civilian educational level at Altus closely resembles the civilian educational level at both Tinker⁸ and Vance Air Force Bases.⁹ In all cases, the median level of education is 12 years. Thus the aerospace industry in

⁷U. S., Bureau of the Census, U. S. Census of Population: 1960. General Social and Economic Characteristics, United States Summary, Final Report PC (1)-1C. 1-260.

⁸Poole, 3.

⁹Smith, January 1963, The Vance Study.

TABLE 9

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY YEARS OF SCHOOL
 COMPLETED, ALTUS AIR FORCE BASE, OKLAHOMA
 AUGUST, 1962

Years of School Completed	Number of Employees	Per Cent
Less than 9	60	14.5
9 - 12	271	65.3
13 - 16	81	19.5
More than 16	1	0.2
No answer	2	0.4
Total	415	100.0

Source: Compiled from data in questionnaire.

Components do not add to 100.0 because of rounding.

Oklahoma does attract groups with somewhat above-average levels of education.

Although not presented in table form, the following data were obtained after relating the employees' budgetary unit classification with their levels of education. Three per cent of the salaried employees completed no more than elementary education, whereas 30 per cent of the hourly workers and 15 per cent of the Non-Appropriated Fund employees completed no more than elementary education. Forty per cent of the salaried, 12 per cent of the hourly and 10 per cent of the Non-Appropriated Fund employees continued beyond high school.

Marital Status. In Table 10 the civilian labor force is classified according to marital status. Although approximately 80 per cent of all workers are married, more than 90 per cent of the males and only 70 per cent of the females are so classified. This percentage of married women who provide income (possibly secondary sources) for their families is quite high in comparison with the national figure of 50 per cent.¹⁰ The explanation for this contrast cannot be conclusively determined here. The higher Altus figure may

¹⁰ Bancroft, 35.

TABLE 10

MARITAL STATUS OF CIVILIAN EMPLOYEES, ALTUS AIR FORCE BASE,
OKLAHOMA, AUGUST, 1962

Marital Status	Number of Employees	Per Cent
Married	335	80.8
Single	59	14.2
Widowed	21	5.1
Total	415	100.0

Source: Compiled from data in questionnaire.

Components do not add to 100.0 because of rounding.

result from either (1) the increased use of household labor saving devices that provide the housewife time for outside employment, (2) the lack of a standard of living desired by the family but not obtained by the husband's labor alone, or (3) a combination of these and other factors.

Length of Service Characteristics. Table 11 compares the general types of employment (budgetary units) with length of service. Table 7 disclosed that the mean length of service is 4.3 years and the median length of service is 3.5 years for all civilian employees. In view of the fact that Altus Air Force Base was reactivated only slightly more than 10 years ago, the mean and median are not sufficient measures of employment stability within the labor force.

The modal tendencies of each budgetary unit reflect the increased employment associated with various phases of the Base's growth. The distribution of salaried workers by length of service is bimodal: (a) 1-2 years and (b) at 7-8 years. The 1-2 year group represents the increased requirements at the base for administrative personnel during the installation of the Atlas "F" missile, whereas the second mode reflects similar increased requirements accompanying the arrival of personnel for the KC-97 and B-47 at Altus.

Increased numbers of hourly employees apparently were

TABLE 11

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY YEARS OF SERVICE AND BUDGETARY UNIT,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Years of Service at Altus Air Force Base	Civil Service Salaried Hourly	Non- Appropriated Funds	Total	Number		Per Cent		
				Civil Service		Salaried	Hourly	Total
				Salaried	Hourly			
Less than one	22	12	62	96	13.6	10.3	45.6	23.1
1 - 2	24	4	28	56	14.8	3.4	20.6	13.5
2 - 3	12	8	10	30	7.4	6.8	7.4	7.2
3 - 4	10	7	15	32	6.2	6.0	11.0	7.7
4 - 5	10	..	6	16	6.2	..	4.4	3.9
5 - 6	2	8	7	17	1.2	6.8	5.2	4.1
6 - 7	19	16	3	38	11.7	13.7	2.2	9.2
7 - 8	24	15	..	39	14.8	12.8	..	9.4
8 - 9	22	31	..	53	13.6	26.5	..	12.8
9 - 10	11	13	1	25	6.8	11.1	0.7	6.0
10 and over	5	2	1	8	3.1	1.7	0.7	1.9
No answer	1	1	3	5	0.6	0.9	2.2	1.2
Total	162	117	136	415	100.0	100.0	100.0	100.0

Source: Compiled from data in questionnaire.

not needed in connection with the arrival of the Atlas "F" at Altus in 1960 because the work was primarily contracted to private firms. Among the hourly employees, the largest group was the one with 8-9 years of service and included one-fourth of that budgetary unit. This group was hired during the base buildup prior to the arrival of Strategic Air Command's B-47 at Altus.

Rapid turnover in Non-Appropriated Fund employees is attributable to many factors. Primarily, these workers are women; many are wives of servicemen who are frequently transferred. Although there are relatively low pay scales (see Table 17) in Non-Appropriated Fund employment, women appear to accept available employment regardless of either their educational background (see discussion accompanying Tables 6 and 9) or other vocational qualifications. The rapid turnover and the relatively low wages of the Non-Appropriated Fund employees attest to their relatively elastic supply. The Non-Appropriated Fund labor supply, composed primarily of women, is similar to the relatively elastic female labor supply throughout the nation.¹¹

¹¹ Ibid., 35.

Home Occupancy Characteristics

Tables 12 and 13 examine the home occupancy both at present and at the time of hiring of the civilian employees. From these data, trends toward home ownership will be ascertained.

Present Home Occupancy. Table 12 compares the general types of employment with home occupancy status as of August, 1962. The type of employment, represented by the different budgetary units, does not fully explain the higher percentage of home ownership among the hourly employees. Although the amount of income is assumed to be an important factor in home ownership, other factors are related and must be considered. The discussion concerning Table 6 on budgetary units disclosed that two-thirds of salaried workers are female. The discussion of marital status (Table 10) revealed that in the "single" category the women employees outnumber the men. Younger employees with shorter lengths of service (Table 11) are found among the salaried employees. Furthermore there is only one married female among the hourly employees. These factors of instability represented by the female sex, single marital status, and youthful age are not present in the hourly group. Therefore, home ownership in

TABLE 12

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY HOME OCCUPANCY STATUS AND BUDGETARY UNIT,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Home Occupancy Status	Number	Per Cent			
		Non- Appropriated Funds		Civil Service	
		Salaried	Hourly	Total	Salaried
Rent	41	16	68	125	25.3
Own	105	88	37	230	64.8
Live with relatives	16	10	30	56	9.9
No answer	...	3	1	4	...
Total	162	117	136	415	100.0
				100.0	100.0

43

Source: Compiled from data in questionnaire.

this labor force is a function of stability, as well as income of the employee.

Home Occupancy When Initially Hired. Home occupancy status of employees when initially hired is presented in Table 13. Two-thirds of the hourly employees and approximately one-half of the salaried employees owned their own homes when they were hired at Altus.

A comparison of Table 12 with Table 13 indicates trends in occupancy status. Among Civil Service salaried and hourly employees a definite movement from home rental toward home ownership was observed. An increase in home ownership may be a function of increased income; however, such a function cannot be shown in this study because estimates of per capita income on the community level are not as yet available. This movement from rental toward ownership, however, can be related to increased stability within the budgetary units--the outstanding example is the hourly employee category.

Tables 12 and 13 are also significant because they reveal no tendency toward increased home ownership among Non-Appropriated Fund employees. The annual mean wage of \$2,151 for this group (to be discussed in Chapter IV), together with the previously mentioned characteristics that produce

TABLE 13

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY HOME OCCUPANCY STATUS WHEN INITIALLY HIRED,
 ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Home Occupancy Status When Initially Hired at Altus Air Force Base	Number			Per Cent		
	Non- Appropriated Funds		Civil Service Total		Non- Appropriated Funds	
	Salaried	Hourly	Salaried	Hourly	Total	Total
Rent	52	27	65	144	32.1	23.1
Own	89	80	37	206	54.9	68.3
Live with relatives	20	7	33	60	12.3	6.0
No answer	1	3	1	5	0.6	2.6
Total	162	117	136	415	100.0	100.0

45

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

instability within this budgetary unit, undoubtedly accounts for the lack of movement toward home ownership.

Mobility Characteristics

Table 14 presents empirical data for analyzing the mobility of this labor force.

Over one-half of the salaried, almost two-thirds of the hourly, and five-sixths of the Non-Appropriated Fund employees were hired within the Altus labor market area without changing residence. The disproportionately high ratio of Non-Appropriated Fund employees who have not moved reflects the number of service dependents employed in a Non-Appropriated Fund capacity. Each service family had established residence in the Altus area before any family dependents were employed at the Base; therefore, most of the Non-Appropriated Fund employees who are dependents of servicemen are included in the category, "same residence as when initially hired."

The category, "moved from inside Oklahoma," includes two general groups: (1) those who have moved within the labor market area (an intra-area spatial orientation) and (2) those who have moved into the area from without (an inter-area orientation).¹² The group with intra-area spatial orientation

¹² For the purposes of this study the intra-area was considered to be the five counties in extreme Southwest

TABLE 14

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY GEOGRAPHIC SOURCE WHEN INITIALLY HIRED,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Geographic Source	Number		Per Cent		
	Civil Service		Salaried	Hourly	Total
	Non- Appropriated Funds	Civil Service Funds			
Moved from outside Okla.	16	12	...	28	9.9
Moved from inside Okla.	55	33	19	107	33.9
Same residence as when initially hired	91	72	117	280	56.2
Total	162	117	136	415	100.0
					47
					6.7
					25.8
					14.0
					86.0
					67.5
					100.0
					100.0

Source: Compiled from data in questionnaire.

may be considered as part of the local labor supply because the individuals were within the labor market area when the Base was reactivated. If the 81 employees who made intra-spatial movements are added to the employee group having the same residence as when initially hired, the percentage of employees from the local labor market area increases to 87 per cent. Many of the new employees of the aerospace industry at Altus were formerly employed in various industries in the area. This inter-industry change in employment by intra-area personnel attests to the short-run mobility among occupations (relatively elastic labor supply). Apparently, this predominantly agricultural area is able to supply in large numbers many and varied skills to a non-agricultural employer.

Commuting Characteristics

Commuting characteristics of the Altus Air Force Base civilian employees are described in separate tables concerning (1) the types of transportation used by employees and (2) the commuting time of employees. A comparison is made of particular social-economic characteristics of the

Oklahoma; Jackson, Harmon, Kiowa, Greer, and Tillman. There were 67 employees who moved within these five counties since initially being hired at the Base. The remainder of 26 are those who moved from other parts of Oklahoma into the Altus labor market area.

long-distance commuters within the labor force with those of a labor force in West Virginia.

Types of Transportation. The principal types of transportation used by the civilian employees are listed in Table 15. Seven workers reported that they walked, and four reported that they used either a bicycle, motor scooter, or motor cycle. Over 95 per cent of this labor force use automobiles in commuting; this figure is similar to that reported in other studies.¹³ Approximately 15 per cent of the workers travel in a car pool; therefore, for each employee who travels in a car with others there are six who drive to work alone.

Commuting Time. The time spent by employees in traveling (one way) to work is detailed in Table 16. On the assumption that driving time is better than distance as a measure of cost, commuting time, rather than distance, was used as a parameter of this study.¹⁴ Almost 75 per cent of the labor force arrives at work in less than 20 minutes. This group consists of the employees living in or near the city of Altus. The succeeding increase in commuting time intervals

¹³ Smith, January 1963, The Vance Study.

¹⁴ Richard W. Poole, "A Theory of Local Labor Market Delimitation" (unpublished Doctoral Dissertation, Oklahoma State University, 1960).

TABLE 15

DISTRIBUTION OF CIVILIAN EMPLOYEES BY COMMUTING METHODS,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Commuting Method	Number of Employees	Per Cent
Automobile	396	95.4
All other ^a	19	4.6
Total	415	100.0

Source: Compiled from data in questionnaire.

^aEight employees did not reply to question.

TABLE 16

DISTRIBUTION OF CIVILIAN EMPLOYEES, BY COMMUTING TIME,
ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Commuting Time (in minutes)	Number of Employees	Per Cent
9 or less	52	12.5
10 - 19	253	61.0
20 - 29	51	12.3
30 - 39	29	7.0
40 - 49	24	5.8
50 and over	6	1.4
Total	415	100.0

Source: Computed from data in questionnaire.

is offset by a corresponding decrease in number of employees.

Commuting time was also related to several independent variables (such as home occupancy status, length of service, marital status, sex, and age) and the data were compared with findings reported by James H. Thompson who related commuting distance to these factors.¹⁵

In his study of an area in West Virginia Thompson found that married people tend to commute farther and that males tend to commute over greater distances. Long-distance commuters not only had slightly below-average periods of service but also were more likely to own their homes.

At Altus 59 individuals had a commuting time of 30 minutes or more.¹⁶ This group included 49 married, 7 single, and 3 widowed employees. The ratio of all married employees to the total labor force is 0.81, and the ratio of married to all employees commuting over 29 minutes is 0.83. Therefore, no significant relationship is apparent between marital status and commuting time, as was found by Thompson.

¹⁵ James H. Thompson, "Commuting Pattern of Manufacturing Employees," Industrial and Labor Relations Review, October, 1956, 70-80.

¹⁶ Employees are classified as Long Distance commuters in this study if their commuting time (one-way) is 30 or more minutes.

At Altus, 37 males and 22 females commute 30 minutes or more. The ratio of these males to the total number in the group of long commuters is 0.61. The ratio of all males in the labor force to the total number in the labor force is 0.49. There is, therefore, among the civilian labor force at Altus Air Force Base a tendency for males to outnumber females in commuting from the more distant points of the labor market area, as Thompson also found in his study.

To determine the relationship between length of service and commuting time among employees at Altus, a ratio of the number of long-distance commuters to the total number of employees was computed in each class interval of length of service (Table 11). The relationship for this labor force is inverse to that reported in Thompson's study; i.e., long-distance commuters had slightly above average periods of service at Altus.

Of the 59 long-distance commuters in this study, 31 own their own home; this is a ratio of 0.53. Table 5 of home occupancy indicates a 0.55 ratio of home owners to the total labor force. Consequently, there is no particularly significant relationship between home ownership and commuting time at Altus; Thompson, however, did report a significant relationship.

Summary

The objective of this chapter was to present the social-economic characteristics of these civilian employees and, thus, furnish some indications to their level of living and comparative well being. Specific characteristics of this group were compared and contrasted with those of other labor force studies.

At Altus Air Force Base a relationship was found between an employee's Budgetary Unit classification and the type of work he performed. Older males filled administrative or managerial positions, whereas younger women supplied the large demand for more numerous types of employment. The ability of these young women to fill such capacities is significant when contrasted with other labor forces where the young married women generally withdrew from employment at least until their children were of school age and often for much longer periods.

Employees supplying labor to the new aerospace industry required higher than average educational levels even though their jobs were, in general, not directly associated with the sophisticated weapons systems (these jobs being occupied by military personnel), but rather were associated with fulfilling the derived needs of the military group. The

effect of technology here is reflected in the rising demand for more highly educated laborers.

The number of married women who worked at Altus appeared to be high in relation to the number reported in other studies and suggests that the rate of such employment will continue rising with further technological developments. This group of married women thus provides a relatively elastic labor supply for employers of many service industries.

In general, the commuting patterns of this labor force resemble those of other labor forces because practically all employees drive to work, and car pools are seldom utilized. Commuting patterns of this labor force and those of the labor force in Thompson's study were compared and one similar relationship was determined; in both cases, male employees tend to have longer commuting distances. However, no particular relationship between (1) marital status and commuting time and (2) home ownership and commuting time was established in this study. Although long-distance commuters had slightly shorter lengths of service in the West Virginia survey, these long-distance commuters at Altus have slightly longer periods of service.

The stability of the Civil Service hourly employee appeared relevant in affecting the tendency toward home

ownership; thus as stability increased, so did home ownership. Increased community stability was likewise a result of the high intra-spatial mobility among employees. The degree to which this labor market area supplied the labor demands created by aerospace technology reflects the adaptability of a predominantly agricultural labor force.

CHAPTER IV

WAGE DISTRIBUTION OF CIVILIAN EMPLOYEES

ALTUS AIR FORCE BASE

The introduction of this study commented upon the changing methods of distribution of resources in our economy. These changes are emphasized by the fact that in 1900 total Federal Government expenditures were less than one billion dollars¹ while in Fiscal Year 1962 Federal Government expenditures amounted to 88 billion dollars.²

This chapter will provide further evidence of the effects of technological change upon the Altus labor force.

¹U. S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957, Washington, D. C., 1960 Library of Congress Card No. A60-9150, pp. 140, 143. Table Series F34-43 Percent Distribution of National Income on Aggregate Payments, by Industry, in Current Prices: 1869 to 1948. Table Series F104-130. Gross and Net National Product, by Major Type of Product, in Current Prices: 1869 to 1931.

²U. S. Treasury Department, Treasury Bulletin, January 1963, 1.

The data presented in this chapter will be concerned exclusively with wage distribution aspects of the group classified according to various social-economic characteristics. Where appropriate, reference will be made to the findings of comparable studies.

Wages Related to Budgetary Units. Wage rates of Civil Service salaried employees are established by the Congress on the principle of equal pay for equal work, regardless of location. Wage rates for hourly employees are administratively established by the Army-Air Force Wage Board on the basis of equal pay for equal work within labor market areas. These wage rates must reflect the trend of going rates for comparable levels of skill and responsibility within the area.³ Although wage rates for Non-Appropriated Fund employees are not so closely controlled by the Department of the Air Force, the governing principles established for Civil Service hourly workers generally are applied by the organizations within the Non-Appropriated Fund category.

Table 17 lists the gross annual wages received by employees within the budgetary units. The average wages within the different budgetary units were as follows: hourly

³U. S. Department of the Air Force, Air Force Manual 40-1, July 29, 1952, 5.

TABLE 17

PERCENTAGE DISTRIBUTION OF CIVILIAN EMPLOYEES, BY GROSS ANNUAL WAGES AND BUDGETARY UNIT, ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Gross Annual Wages	Per Cent			
	Civil Service		Non- Appropriated Funds	Total
	Salaried	Hourly		
Less than \$2,000	....	....	18.0	18.0
2,000-3,999	5.3	0.5	12.3	18.0
4,000-5,999	24.1	23.4	1.7	49.2
6,000-7,999	6.3	4.1	0.5	10.8
8,000-9,999	2.9	0.2	0.2	3.3
10,000 and over	0.5	....	....	0.5
Total	39.1	28.2	32.7	100.0

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

employees - \$5,531; salaried employees - \$5,274; and Non-Appropriated Fund employees - \$2,151. Moreover the dispersion of wages (from the mean) within budgetary units was least among hourly employees and greatest among salaried employees.

The difference in average wages received by the employees of the three budgetary units can be partially explained by the type of employment (see Table 6, Chapter III). However, other factors such as age, sex, education, and length of service, also help explain this difference among budgetary units in average wages and will be discussed later in this chapter.

The difference in dispersion of wages among the budgetary units is partially attributable to the relatively high wages received by professional groups such as engineers, managers, and administrators. The relative value to the Base of these employees is reflected by their wages. These professional groups are employed within the salaried category except for a few within the Non-Appropriated Fund category who are managers.

Age as a Factor. Table 18 considers age as a factor in wage distribution. The average wage for all age groups is \$4,323. Stigler suggested that age, as well as another

TABLE 18

 PERCENTAGE DISTRIBUTION OF GROSS ANNUAL WAGES, BY AGE GROUPS, CIVILIAN EMPLOYEES,
 ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Gross Annual Wages	Age Group						no answer	Total
	19 and under	20-29	30-39	40-49	50-59	60 and over		
Less than \$2,000	1.1	1.3	1.5	1.3	0.6	0.1	0.1	6.0
2,000-3,999	0.8	2.6	3.9	2.7	1.9	0.3	...	12.2
4,000-5,999	...	7.7	12.3	18.4	14.4	3.8	0.3	56.9
6,000-7,999	...	0.4	5.8	4.9	4.3	1.4	...	16.8
8,000-9,999	...	0.5	2.4	1.9	2.0	...	...	6.8
10,000 and over	...	...	...	...	0.7	0.6	...	1.3
Per cent of aggregate wages by age group	1.9	12.5	25.9	29.2	23.9	6.2	0.4	100.0
Per cent of employees by age group	5.1	15.4	26.0	27.5	20.5	5.1	0.5	100.0
Average wage by age group	\$1626	\$3500	\$4322	\$4589	\$5030	\$5306	...	\$4323

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

factor, the size of the community, is highly important as a determinant of income.⁴ In one study cited by Stigler these two characteristics accounted for one-third of the inequality of income among lawyers.⁵ The effect of community size upon inequality of wage in this study is negligible because employees live within the Altus labor market area; however, age as a factor in wage distribution is important. Thus, Table 18 shows this relationship.

The divergence in wages can be observed by the difference within each age group between percentage of wages received and percentage of employees. More illustrative, however, is the divergence in wages as shown by the variations in average wages of age groups; this average rises from \$1,626 for the youngest age group to \$5,306 for those 60 and over. The large increase in average wage of the 20-29 age group over the 19-and-under group is explained by the fact that very few full-time employees are found in the younger age group.⁶ In the succeeding age groups, the mean

⁴George J. Stigler, The Theory of Price (New York: The Macmillan Company, 1952), 268.

⁵W. Weinfield, "Income of Lawyers 1929-48," Survey of Current Business, August 1949, quoted in George J. Stigler, Ibid., 266-270.

⁶Compiled from data in the questionnaire.

wage does not increase in a constant manner. For example, the difference between the wage of those in the 20-29 age group and those in the 30-39 age group is \$822, whereas the difference between wages of the 30-39 age group and the 40-49 age group is only \$367. Table 8, which classifies the employees according to sex and age, provides some explanation. The female at Altus, as in other labor forces, does not generally occupy the more highly paid managerial positions. Four-fifths of the 20-29 age group are women, but only one-third and one-tenth of the oldest two age groups are women. As with sex and age, other factors such as value of the employee to the Base help account for this variation in wage. Age, although itself not necessarily the cause of rising wages, is a co-variant with these other factors. Eventually, administrative personnel become managers and hourly laborers obtain foreman positions; both are examples of employees who have increased their wages because their value to the Base increased through time. But the time factor (and, therefore, wages) also is reflected when employees are grouped by age. Similarly, wage increases because of longevity pay are reflected in the older age groups. All of these factors, then, account for the correlation of gross annual wages with respect to sex and age.

Another significant characteristic, illustrated in Table 18, shows that the level of wages does not diminish in the older wage brackets. The institutional framework of the Civil Service system may help explain this persistent increase. Although employees may retire at age 55 if they have accumulated enough retirement credit, most of these older employees at Altus have not yet acquired the necessary retirement credits to qualify for this benefit. Another possible explanation for continuously rising wages may be the fact that older individuals can continue working as their age increases because modern technology has drastically reduced the manual effort required of the labor force. This explanation implies a preference for work on the part of the older employee, but a 1955 empirical study by Herman Miller casts doubt upon that assumption.⁷ Because the Altus Air Force Base study consists basically of a cross-sectional analysis and does not, in general, include changes over a period of time, a more detailed explanation of the significance of the older employees who receive continuously rising wages cannot be inferred from this study.

Education as a Factor. Table 19 presents the

⁷ Herman P. Miller, Income of The American People (New York: John Wiley & Sons, 1955), 76.

relationship of education to wage distribution. No linear pattern exists among Altus employees in terms of education and wages. Employees with only grade school backgrounds received an average annual wage of \$4,173, while employees with nine to twelve years of school received \$4,000, and employees with some college education received \$5,527.

Herman Miller found a high correlation of income to educational attainment in his book, Income of the American People.⁸ This relationship is supported by the finding that the average wage of the Altus employees with education beyond high school is \$1,404 higher than the mean of the entire labor force at Altus. The remaining employees with grade school backgrounds and high school backgrounds receive an average annual wage below the mean of the entire labor force at the Base.

However, when employees with a college background are excluded from consideration, a direct relationship between education and wages is not apparent. This departure from the more general relationship of education to wages in the nation's labor force is principally explained by the fact that many of the Altus workers with high school

⁸Ibid., 65.

TABLE 19

PERCENTAGE DISTRIBUTION OF GROSS ANNUAL WAGES, BY YEARS OF SCHOOL, CIVILIAN EMPLOYEES, ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Gross Annual Wages	Years of School				Total
	no answer	less than 9 years	9-12	13 and over	
Less than \$2,000	0.2	0.9	4.6	0.3	6.0
2,000-3,999	...	1.7	9.1	1.4	12.2
4,000-5,999	...	10.3	35.1	11.6	57.0
6,000-7,999	...	1.1	10.0	5.6	16.7
8,000-9,999	...	....	1.4	5.3	6.7
10,000 and over	...	....	....	1.2	1.2
Total	0.2	14.0	60.4	25.4	100.0
Average Wage by Years of School	....	\$4173	\$4000	\$5527	....

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

backgrounds are either teenage or married women employees, who work on a part-time basis. On the other hand, the group with a grade school background consists generally of older males who work on a full-time basis.

Length of Service as a Factor. Table 20 compares length of service with wage distribution. Length of service of the worker is an expression of many factors which act interdependently upon each employee.⁹ Social characteristics, such as age, education, marital status, sex, and number of dependent children, as well as economic characteristics, such as type of employment, alternative job opportunities, and amount of income, are reflected in the length of service of the employee.

The major finding of Table 20 is the co-variation of length of service and wages. This trend in wages accompanying increased tenure is a partial result of the Civil Service wage system; in view of the fact that this system was designed to reflect comparable wage scales of private employment and that Non-Appropriated Fund employees' pay scales

⁹Bancroft, p. 1. According to a Census Bureau survey covering job histories of persons who worked in 1955, 42 per cent of the job changes during the year were made to improve status, and 16 per cent were due to the termination of a temporary job.

TABLE 20

DISTRIBUTION OF CIVILIAN EMPLOYEES AND THEIR GROSS ANNUAL
 WAGES, BY LENGTH OF SERVICE, ALTUS AIR FORCE BASE,
 OKLAHOMA, AUGUST, 1962

Length of Service (Years)	Per Cent of:		Average Wage
	Employees	Gross Annual Wages	
Less than 1	23.1	15.2	\$2834
1 - 2	13.5	11.2	3596
2 - 3	7.2	6.9	4141
3 - 4	7.7	6.9	3889
4 - 5	3.9	4.3	4870
5 - 6	4.1	4.0	4262
6 - 7	9.2	11.5	5434
7 - 8	9.4	11.4	5259
8 - 9	12.8	16.6	5635
9 - 10	6.0	8.2	5855
10 and over	1.9	2.7	6153
no answer	1.2	0.9	3160
Total	100.0	100.0	

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

are comparable to local commercial pay scales. On the assumption that the Civil Service system does achieve these design characteristics, the labor market area surrounding Altus Air Force Base apparently does not provide effective alternative employment for the more senior (in years of service) members of the labor force.

The rising trend in wages through increased tenure does not move upward at a constant rate. These fluctuations in the trend deserve some explanation. The type of employment (represented by budgetary units) of the majority of employees within each class interval of the distribution of tenure accounts for much of the fluctuation. Most of the employees comprising the first two class intervals (less-than-one and one-two years) are employed in the Non-Appropriated Fund unit. Furthermore, Non-Appropriated Fund workers comprise a large portion of the three-four year and the five-six year groups. The four-five year class is affected by the large number of salaried employees; the eight-nine year class is similarly affected by the large number of hourly employees. Thus the category of employment appears to be the best explanation of the fluctuations within the rising trend of average wages.

The Significance of Commuting Time.¹⁰ The relationship between gross annual wages and commuting time is indicated in Table 21. The low average wage of employees who live nine or less minutes from the Base can be explained by the fact that the many employees are either wives or dependents of military personnel and live on or near the Base. Most of these wives are employed in low-paying Non-Appropriated Fund capacities, while a few are secretaries in the salaried category; because of either age or frequent military transfers, they have not qualified for tenure increases in their wages. Dependent children of the military personnel were generally employed in Non-Appropriated Fund capacities usually on a part-time basis. Other relationships between increased commuting time and gross annual wages do not appear to affect wage determination.¹¹

¹⁰The recent theoretical work by Dr. Richard W. Poole, A Theory of Local Labor Market Delimitation, suggests that labor markets may be delimited by travel time considerations provided that the marginal productivity of labor and capital are equal between centers of employment. Following a determination of per capita income within communities, the marginal productivity of labor and capital may be approximated; only then can a delimitation of local labor markets be made with reasonable accuracy. The value of this and other tables may then be increased many fold. Pp. 1, 107.

¹¹Thompson, 75. Mr. Thompson found a strong, direct relationship between increased commuting distance and wages.

TABLE 21

DISTRIBUTION OF CIVILIAN EMPLOYEES AND THEIR GROSS ANNUAL
 WAGES, BY COMMUTING TIME, ALTUS AIR FORCE BASE,
 OKLAHOMA, AUGUST, 1962

Commuting Time (Minutes)	Per Cent of:		Average Wage
	Employees	Gross Annual Wages	
9 or less	12.5	9.0	\$3095
10 - 19	61.0	65.0	4610
20 - 29	12.3	11.3	3966
30 - 39	7.0	6.4	4946
40 - 49	5.8	6.9	5156
50 and over	1.4	1.5	4391
Total	100.0	100.0	

Source: Compiled from data in questionnaire.

Components do not always add to 100.0 because of rounding.

An Aspect of Mobility. Table 22 provides a measure of the wage inducements which generated mobility of the Altus civilian employees. An extensive series of labor mobility studies provides empirical data that support the hypothesis that labor immobilities have occupational, industrial, geographical, and other social-economic bases.¹² Chapter III considered some estimates of the extent of these barriers to mobility; the willingness and ability to change occupations; the declining influence of geographic restrictions because of increased commuting capabilities; the influences of sex, age, education, marital status, and home occupancy status.

The average gross annual wage for the three classifications of employees, by geographic source, when initially hired was \$6,170 for those moving to the Altus area from outside Oklahoma, \$4,998 for those moving from inside Oklahoma, and \$3,875 for the employees having the same residence as when initially hired.¹³ Actual alternative costs for these

¹² William Goldner, "Spatial and Locational Aspects of Metropolitan Labor Markets," American Economic Review, XLV (March, 1955), p. 113.

¹³ A possible subject for future labor force studies would be the alternative cost of employees at their geographic source when initially hired. These relative wage data are not available for analysis here.

TABLE 22

PERCENTAGE DISTRIBUTION OF GROSS ANNUAL WAGES, BY GEOGRAPHIC SOURCE WHEN INITIALLY HIRED, CIVILIAN EMPLOYEES, ALTUS AIR FORCE BASE, OKLAHOMA, AUGUST, 1962

Gross Annual Wages	Geographic Source			Total
	Moved from Outside Oklahoma	Moved from Inside Oklahoma	Same Residence as When Initially Hired	
Less than \$2,000	...	0.6	5.4	6.0
2,000 - 3,999	0.4	2.5	9.3	12.2
4,000 - 5,999	4.1	17.7	35.1	56.9
6,000 - 7,999	4.0	5.4	7.3	16.7
8,000 - 9,999	0.5	2.9	3.4	6.8
10,000 and over	0.6	0.7	....	1.3
Total	9.6	29.8	60.5	100.0

Source: Compiled from data in questionnaire.

Components do not add to 100.0 because of rounding.

categories of employees are not available; however, direct relationship between the degree of mobility and average wage is present. This relationship is reinforced by reclassification of the category, "moved from inside Oklahoma," into the two sub-categories, "moved from inside the labor market area" and "moved from other areas in Oklahoma."¹⁴ The average wage of employees in the first sub-category is \$4,655, while the average for employees moving from more distant locations within Oklahoma is \$6,064.

Summary

The objective of this chapter was to present evidence of the effects of technological change upon the labor force as shown by wage distributions when compared with different social-economic characteristics.

The dispersion of wages was greatest among salaried employees and smallest among hourly workers. The capacity to recognize differences in the value of the employee to the base, especially with professional categories of work, accounted for this difference in dispersion in wages of each category of employment.

¹⁴The labor market area as defined in this study includes five Oklahoma counties: Jackson, Harmon, Greer, Kiowa, and Tillman.

The cause of the correlation of gross annual wages with respect to age and sex could be explained by: (1) acceptance of relatively low wages by female employees; (2) value of the employee to the Base which increases with age; and (3) longevity, which is also a function of age. There was no decline in average wages received by older age groups as compared with younger age groups. Instead, these older groups had continuously rising average wages. This continuous rise is not true for the national labor force. The cause of this local phenomenon could be due to either institutional or personal factors.

Altus civilian employees with education beyond high school received an average annual wage of \$1,404 above the mean wage of the entire Altus labor force, while those with grade school backgrounds and those with high school backgrounds received an average annual wage below the mean. A high correlation between education and wage does not exist because of the low wage characteristic of part-time employees in the group with high school backgrounds.

The increase in length of service of the employees was paralleled by an increase in average wage. This rising trend in wages along with increased tenure suggested a lack of alternative employment within the labor market area for

the more senior (in terms of tenure) employees. Fluctuations in average wages within the rising trend could be explained by concentrations of types of employment (budgetary units) within the various length of service intervals.

The low average wage of employees commuting nine or less minutes was caused primarily by the fact that these employees were wives or dependents of military personnel who generally accepted low-paying, temporary employment. Other relationships between commuting time and wage determination were not significant.

The average wage adequate to induce mobility of employees was directly related to the extent of required increasing mobility classified according to: (1) the local labor market; (2) the rest of Oklahoma; (3) the labor markets of all other states.

CHAPTER V

SUMMARY

This study has provided empirical data concerning the social-economic characteristics and wage distribution of a unique labor force. The civilian labor force emerged as a consequence of changing technology in aerospace with the re-establishment in 1953 of Altus Air Force Base in southwestern Oklahoma.

The agricultural economy of southwestern Oklahoma has been undergoing continual change for many years. This change has resulted in (1) a persistent decline of employment in agriculture and (2) an accompanying decline in population. The reestablishment of Altus Air Force Base generated (1) annual wages of over 10 million dollars to military and civilian employees, (2) multi-million dollar recurring construction outlays, and (3) annual operating expenditures in excess of 4 million dollars. The effects upon the neighboring community (Jackson County) were the following: (1) a

shift in the percentage of employment within the various types of industries which resulted in a large increase in employment within the service industries; (2) an increase in aggregate employment; and (3) a reversal of the decline in population.

The employees analyzed in this study resided in or near 23 cities surrounding Altus Air Force Base. However, the majority lived in Jackson County and within the city of Altus, Oklahoma. One important characteristic identified by this study was the high inter-industry mobility of the Altus employees. Most of the employees did not move into the Altus labor market area for employment at the Base; on the contrary, most were living in the area prior to the reestablishment of the Base. Therefore, the high inter-industry mobility in Jackson County (less Altus Air Force Base) is even more pronounced when the Base data are considered.

The different budgetary unit classifications generally identified the types of employment at the Base. A larger dispersion of wages in the salaried category of employment was partially accounted for by the value of the employee to the Base. The dispersion decreased among Non-Appropriated Fund employees and was least among hourly employees.

The following phenomena within the labor force were

primarily associated with age and sex characteristics: (1) Young women worked in many different capacities which they accepted without regard to their educational backgrounds. (2) Also the wages of young women were lower than those of other members of the labor force. (3) Although many of the young women were married, total employment of married women remained relatively constant through childbearing years. (4) Regardless of sex, employment termination rates of the younger employees were higher than those of the older employees. (5) Older males were generally associated with three recognizable traits: (a) above average value to the Base, as reflected in jobs as managers, foremen, and relatively high paid administrators; (b) stability, as reflected in home ownership and long tenure of employment; and (c) above average annual wages.

The average educational level of the Altus employees exceeded the state and national levels. The average annual wage of employees with some college background was approximately \$1,500 larger than that of employees with high school backgrounds; likewise, the average annual wage of employees with only grade school backgrounds was slightly larger than the average wage of the employees with high school backgrounds. Therefore, educational levels are inconclusive

indicators of wage rates of the employees included in this study.

Almost all employees at Altus drove to work in cars. Only one in six employees utilized a car pool. The average wages of employees in successively increasing commuting time intervals disclosed that there was no significant relationship between commuting time and wage determination except for employees who were wives or dependents of military personnel. This group who lived in or near the Base were generally employed in either low-paying or part-time capacities and were low in tenure because of frequent military transfers. Among the remaining social-economic characteristics of the Altus employees, only two suggested a significant relationship with commuting time; (1) males tended to commute farther than females, and (2) employees with long commuting times had above average tenure at the Base.

Sixty per cent of the labor force occupy the same residence as when initially hired and receive (in August, 1962) an average annual wage of \$3,875; 30 per cent moved from inside Oklahoma into the Altus labor market area and receive an average annual wage of \$4,998; and ten per cent moved from other states into the Altus labor market area and receive an annual wage of \$6,170. Thus, a direct relationship

exists in this limited labor force between wage inducement and geographic mobility.

This analysis of the civilian labor force at Altus Air Force Base, Oklahoma, demonstrates some effects of technological change. The social-economic characteristics and wage distribution of these civilian employees as identified here can take on additional meaning when related to concurrent studies of similar labor forces. A future study of the changes in the social-economic characteristics and wage distribution of this labor force at Altus Air Force Base would provide further knowledge of the effects upon people of our progressing technology.

APPENDIX A

Appendix A includes the endorsing letter and blank questionnaire that was submitted to all civilian employees at Altus Air Force Base, Oklahoma.

HEADQUARTERS
11TH STRATEGIC AEROSPACE WING (SAC)
United States Air Force
Altus Air Force Base, Oklahoma

REPLY TO

ATTN OF: DP

SUBJECT: Survey of Altus Air Force Base Civilian Employees

TO: All Civilian Employees, Altus Air Force Base

1. Altus Air Force Base has been selected as one of a number of Governmental agencies to participate in an economic research project. This is being conducted by the State Universities of Oklahoma and is part of an important national project. You are being asked to fill out the attached questionnaire. The information you provide will be kept in confidence. Only the totals will be used in the study.
2. Directions: Read each statement on the attached three page questionnaire carefully. In some cases it will be obvious that the question does not apply to you. If the question does not apply, do not attempt an answer. Several questions can be answered "Yes" or "No". Where this is the case, draw a circle around the correct word. Some questions can be answered by filling in the space provided with a number. When using a number for your answer, be sure you are using the right number of years, miles, minutes, etc. Other questions ask for a one or two word answer. For instance, question 4(h) asks for your job title. Simply print whatever describes your job. If you know its equivalent AFSC, please include it. If you do not know the equivalent AFSC do not attempt a guess. Accuracy is very important.
3. Return the completed questionnaire to your supervisor not later than 6 Aug 1962. He, in turn, will arrange to have it delivered to the Civilian Personnel Office for tabulation.

AUTHORITY: Dept of Defense, Hq USAF, subj: "Participation in NASA Sponsored Survey", dated 6 July 1962, w/2 Inds.

MILTON R. WEAVER, Lt Col, USAF
Director of Personnel

1 Atch
Questionnaire

ALTUS AFB CIVILIAN ECONOMIC IMPACT SURVEY

1. CURRENT ADDRESS:

(a) Print the name of the county in which you live: _____

(b) If you live in a town, print its name: _____

(c) If you do not live in a town, then give distance and location from nearest town: (Example: 2 miles S.W. Altus)

(Miles) (Direction) (Town)

(d) How long have you lived at this address? _____ years,
_____ months(e) Do you (Check One): _____ Rent, _____ Own, _____ Live
with relatives2. ADDRESS WHEN INITIALLY HIRED AT ALTUS AFB: (Note: If same
as above, write in "SAME" and skip questions 2(a) (b) and
(c) below):City (If rural, list direction and distance from nearest
town)

County State

(a) At this address did you (Check one): _____ Rent, _____
Own, _____ Live with relatives

(b) If this residence was a farm give its size: _____ Acres

(c) Was the main reason for moving from this address to
get you closer to work (Check one) _____ Yes _____ No

3. TRAVEL TO WORK DATA:

(a) What is the driving distance from your home to your
Altus AFB parking lot (one way, based on route nor-
mally taken) _____ Miles

(b) How long does it normally take? _____ Minutes

(c) How do you normally get to work? (Circle one):
AUTO BUS BICYCLE WALK If Other, specify _____

(d) Do you belong to a car pool? (Circle one): YES NO

4. EMPLOYMENT DATA:

(a) If you are a Civil Service employee, write your level opposite your status: Graded: GS _____ Step in Grade _____
Wage Board: W _____ Step in Grade _____
L _____ Step in Grade _____
F _____ Step in Grade _____

(b) Are you a Non-Appropriated Fund Activity Employee?
(Circle one) YES NO

(c) How long have you worked at Altus AFB? _____ Years _____ Months

(d) How long have you worked at your present job?
_____ Years _____ Months

(e) What is your total Civil Service employment?
_____ Years _____ Months

(f) Are you a "handicapped" employee? (Circle one)
YES NO

(g) Were you employed in the Altus area before being
hired at Altus AFB? (Circle one) YES NO

(h) What is your job title? _____

5. PERSONAL DATA:

(a) What is your age? _____ Years

(b) What is your sex? (Circle one) MALE FEMALE

(c) Are you (Circle one) SINGLE MARRIED WIDOWED

(d) IF MARRIED, is your spouse: (Circle one if
appropriate)

A member of the Armed Forces
Employed by Civil Service
Employed by a Non-Appropriated Fund Activity

(e) IF MARRIED, is your spouse employed at Altus AFB?
(Circle one) YES NO

(f) Have you completed Elementary School?
(Circle one) YES NO

(g) Have you completed High School?
(Circle one) YES NO

(h) If your answer to either 5(f) or 5(g) above is "NO",
list the highest grade you completed. _____

(i) If you have attended college, circle highest level
that you completed: DID NOT COMPLETE FIRST YEAR OF
COLLEGE FRESHMAN SOPHOMORE JUNIOR SENIOR
MASTER'S DOCTORATE

APPENDIX B

RESUME OF OPERATING BUDGET, ALTUS AIR FORCE BASE, OKLAHOMA
FOR FISCAL YEAR 1963

Expenditure	Funds	
	Requested	Received
Allied Pay	\$ 122,900	\$ 121,600
Base TDY	118,200	100,000
SAC TDY	NA	3,900
Transportation	82,600	90,800
Communications	277,600	246,300
Utilities	369,400	343,200
Equipment Rental	8,500	3,500
Printing	1,400	400
Real Property Maintenance	NA	340,300
Laundry	34,900	30,000
Education	56,700	56,700
Motor Vehicle Maintenance	49,900	43,100
Ground Power Equipment Maintenance	7,400	4,000
Other Equipment Maintenance	60,700	46,700
Custodial Services	26,600	26,600
Miscellaneous CE Contracts	322,000	63,000
Storage of Household Goods	9,200	9,200
D/Materiel Contracts	3,000	1,400
Other Contract Services	2,900	1,500
Refunds, P-470	25,900	25,900
Refunds, P-461	51,900	59,600
Ground Petro, Oil, Lubri	150,000	189,000
Fuel for Utilities	249,200	210,400
Cloth-Supplies	114,500	70,000
Stock Fund Supplies	95,200	200,000
GSS Supplies	10,000	10,000
Commissary Supplies	5,500	6,000
GSSF Supplies	98,500	100,000
Missile Propellants	739,200	425,000
GSA Equipment	78,600	12,100

APPENDIX B--Continued

Expenditure	Funds	
	Requested	Received
Commissary Equipment	\$ 36,000	\$ 34,000
Commercial Equipment	53,900	93,700
Cloth-Equipment	31,300	35,000
SF Equipment	15,200	10,000
Claims	800	300
 Total	 \$4,036,800	 \$3,417,300

Source: Altus Air Force Base Budget Officer.

APPENDIX C

ALTUS AIR FORCE BASE EXPENDITURES WITHIN THE CITY OF ALTUS,
 OKLAHOMA, FOR FISCAL YEAR 1962
 (excludes payroll disbursements)

Type of Expenditure	Amount	Per Cent
Subsistence	\$ 112,000	14.0
Hardware and Building Supplies	96,000	12.0
Office Supplies	27,200	3.4
Vehicle Parts	72,800	9.1
Medical Supplies	11,200	1.4
Moving and Storage	38,400	4.8
Construction	180,800	22.6
Petroleum	4,000	0.5
Contract Maintenance and Services	93,600	11.7
Utilities	120,000	15.0
Miscellaneous	44,000	5.5
Total	\$ 800,000	100.0

Source: Altus Air Force Base Procurement Office.

APPENDIX D

DISTRIBUTION OF SPENDING BY BASE PROCUREMENT OFFICER,
 ALTUS AIR FORCE BASE, FISCAL YEAR, 1961
 (thousands of dollars)

Commodity	Total	Altus	Oklahoma	Other States
Subsistence	\$ 1,207	\$ 87	\$ 533	\$ 587
Office Supplies	109	21	48	40
Hardware & Bldg. Supplies	435	75	71	290
Vehicle Parts	103	56	9	37
Medical Supplies	54	8	23	23
Moving & Storage	29	29	0	0
Construction	740	141	271	329
Petroleum	83	3	23	57
Contr. Maint. & Services	211	73	56	82
Miscellaneous	84	7	1	75
Utilities	299	120	179	0
Total	\$ 3,355	\$ 621	\$ 1,214	\$ 1,520

Source: Prepared by Altus Air Force Base Procurement Office.

Per cent of Total spent in Altus: 19%

Per cent of Total spent in other towns in Oklahoma: 36%

Per cent of Total spent in other states: 45%

Components do not always add to totals because of rounding.

BIBLIOGRAPHY

Primary Source

The primary source for all data relating to civilian employees at Altus Air Force Base, Oklahoma was the questionnaire completed in August, 1962 by each member of the labor force. The social-economic and wage characteristics of the civilian employees were determined from these questionnaire, which, consequently, became the basic source of this study.

Secondary Sources

Books

Bancroft, Gertrude. The American Labor Force: Its Growth and Changing Composition. New York: John Wiley and Sons, Inc., 1958.

Blaug, M. Economic Theory in Retrospect. Homewood, Illinois: Richard D. Irwin, Inc., 1962.

Meier, Gerald, and Baldwin, Robert E. Economic Development: Theory, History, Policy. New York: John Wiley & Sons, 1955.

Miller, Herman. Income of The American People. New York: John Wiley & Sons, 1955.

Poole, Richard C. Characteristics and Commuting Patterns of the Oklahoma City Air Materiel Area Labor Force. Tinker Air Force Base, Oklahoma: U. S. Air Force, 1962.

Stigler, George J. The Theory of Price. New York: The Macmillan Company, 1952.

Interviews

Altus Air Force Base, Oklahoma. Personal interviews with Division, Wing, and Base Commanders. July, 1962.

_____. Personal interview with Major Louis A. Burdman, Director of Information. July, 1962.

_____. Personal interview with Captain Thorton Burwell, Base Procurement Officer. August, 1962.

_____. Personal interview with Major R. N. Smith, Base Finance Officer. August, 1962.

_____. Personal interviews with Mr. William C. Ferrell, Director of Civilian Personnel, July, 1962; August, 1962.

_____. Personal interview with Technical Sergeant William E. Reeder, Office of Deputy Commander for Services. August, 1962.

_____. Personal interview with Secretary of Records, Base Exchange. August, 1962.

Periodicals

Goldner, William. "Spatial and Locational Aspects of Metropolitan Labor Markets," American Economic Review, XLV (March 1955), pp. 113-128.

Thompson, James H. "Commuting Patterns of Manufacturing Employees," Industrial and Labor Relations Review, October 1956, pp. 70-80.

Public Documents

Thirteenth Census of the U. S. Population, 1910. Vol. III.

Fourteenth Census of the U. S. Population, 1920. Vol. III.

Fifteenth Census of the U. S. Population, 1930. Vol. III.

Sixteenth Census of the U. S. 1940 Population, Characteristics of the Population. Vol. II.

U. S. Bureau of the Census. Census of Population 1950, Characteristics of the Population, Vol. II.

U. S. Bureau of the Census. U. S. Census of Population 1960.. Final Report PC (1)-38A.

U. S. Bureau of the Census. U. S. Census of Population: 1960. General Social and Economic Characteristics, Oklahoma. Final Report PC (1)-38C.

U. S. Bureau of the Census. U. S. Census of Population: 1960. General Social and Economic Characteristics, United States Summary. Final Report (1)-1C.

U. S. Bureau of the Census. Historical Statistics of the United States, Colonial Times to 1957.

U. S. Treasury Department. Treasury Bulletin. January 1963.

U. S. Department of the Air Force. Air Force Manual 40-1, July 29, 1952.

Unpublished Material

Altus Air Force Base (Oklahoma) Procurement Office. Data on Procurement Expenditures. 1960-1963. (Mimeographed.)

Altus Air Force Base (Oklahoma) Office of the Comptroller. Unclassified portions of Altus Air Force Base Operating Budget for Fiscal Year 1963. (Typewritten)

Chapman, Josh L. "Historical Summary of Altus Air Force Base, Oklahoma," Altus, Oklahoma, December, 1962. (Typewritten.)

Poole, Richard W. "A Theory of Local Labor Market Delimitation," unpublished doctoral dissertation, Oklahoma State University, 1960.

Smith, Walter A. "Income Distribution Among the Civilian Employees, Vance Air Force Base, Enid, Oklahoma," unpublished master's thesis being prepared at the University of Oklahoma, 1963.